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Robert C. Lam

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/678,599
Filing Date: October 03, 2003
Appellant(s): LAM ET AL.

Emch, Schaffer, Schaub & Porcello Co, LPA
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/28/2008 appealing from the Office action mailed 8/2/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal encompasses:

(A). Whether claims 1, 2, 4, and 6-19 are patentably distinct under 35 USC 103(a) over EP 1,203,897

(B). Whether claims 1, 2, 4, and 6-19 are patentably distinct under 35 USC 103(a) over US Patent 5,998,307 in view of EP 1,203,897.

Withdrawn Rejections:

(C). Whether 1, 2, 4, and 6-19 are patentably distinct under 35 USC 103(a) over US Patent 6,630,416 as applied to 102(f). This ground of rejection has been withdrawn in the Examiner's Answer to the Appeal Brief.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

EP 1,203,897	Chen	06-2000
5,998,307	Lam et al	12-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A. Claim 1, 2, 4, 6-19 rejected under 35 U.S.C. 103(a) as being obvious over Chen et al EP 1203897. Chen EP '897 teaches a friction material comprising a fibrous base material impregnated with a curable resin wherein the fibrous base material comprises a porous primary layer and a secondary layer. Chen EP '897 teaches a secondary layer comprising friction modifying particles comprising silica. Chen EP '897 differs from the claimed invention because Chen EP '897 does not teach that the secondary layer comprises a mixture of 20-35% silica and 65-80% carbon. The current application claims a friction material with a secondary layer of friction modifying particles of a mixture of 20-35% silica and 65-80% carbon. Chen EP '897 does not teach the composition of the friction particles in the secondary layer, however, Chen EP '897's claim 5 teaches friction modifying particles comprising silica particles; resin powders;

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carbonized carbon powder or particles and mixtures thereof. Chen EP '897's specification, pg 7 lines 11-17 teach various friction modifying particles that are useful as the secondary layer on the fibrous base material that include silica and carbon as in claim 1 of the current application. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a mixture because Chen EP '897 teaches friction modifying particles in the secondary layer, and teaches that silica and carbon and mixtures thereof are suitable for use as friction modifying particles. One of ordinary skill in the art would have been motivated to employ a mixture because Chen EP '897 teaches the advantages of silica and carbon as friction modifying particles. It further would have been obvious to have selected the appropriate amounts of the two particles through the process of routine experimentation to obtain optimum friction properties.

B. Claim 1, 2, 4, 6-19 rejected under 35 U.S.C. 103(a) as being obvious over Lam et al US Patent 5998307 in view of Chen et al EP 1203897. Lam teaches a friction material comprising a fibrous base material impregnated with a curable resin, a fibrous base material comprising a porous primary layer and a secondary layer. Lam teaches a secondary layer comprising friction-modifying particles comprising carbon particles. Lam differs from the claimed invention because Lam does not teach that the secondary layer comprising a mixture of 20-35% silica and 65-80% carbon. The current application claims a friction material with a secondary layer of friction modifying particles of a mixture of 20-35% silica and 65-80% carbon. Chen EP '897 teaches a secondary

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layer comprising friction-modifying particles comprising silica. It would have been obvious at the time of the invention to one of ordinary skill in the art to employ a mixture of silica and carbon because Lam teaches carbon as friction modifying particles (col 3 lines 40-44) and Chen EP '897 teaches silica as a friction-modifying particle. One of ordinary skill in the art would have been motivated to employ a mixture because Lam and Chen EP '897 teach the advantages of silica and carbon as friction modifying particles. It further would have been obvious to select the appropriate amounts of the two particles through the process of routine experimentation to obtain optimum friction properties.

With regard to claim 17, Chen EP '897 teaches fibrillated aramid fibers having a freeness of about 430 to about 650 on the CSF index in claim 7 and at least about 300 in claim 6. The current application teaches aramid fibers having a freeness of about 350 to about 650 on the Canadian Standard Freeness index. It would have been obvious to one of ordinary skill in the art at the time of the invention to use aramid fibers in the range of 350 to 650 CSF index.

With regard to claims 11 and 16, Chen EP '897 teaches fibrillated aramid fibers having a freeness of about 430 to about 650 on the CSF index in claim 7 and at least about 300 in claim 6. The current application requires the CSF index be greater than 430 and less than 640 for the fibrous base material. It would have been obvious to one of ordinary skill in the art at the time of the invention to use aramid fiber in the range of 350 to 650 CSF index.

(10) Response to Argument

Appellant's arguments are organized into summary of arguments to rejections A, B, C and detailed arguments to rejections A, B, C. Examiner will consider summary and detailed arguments relative to the A rejection to Chen EP '897 rejection and summary and detailed arguments relative to the B rejection to Chen EP '897 in view of Lam rejection and summary and detailed arguments relative to the Lam rejection.

I and II A. Appellant's arguments with respect to the 35 USC 103(a) rejection over Chen EP 1,203, 897.

Appellant argues that the key elements of the invention as defined by the claims on Appeal must be found in the prior art or there must be a clear suggestion to modify the teachings of the reference to utilize the limitations defined in the claims on Appeal. Appellant argues that the Chen EP '897 reference does not teach the specific combination for the secondary layer that would lead one skilled in the art to the specific combination contained in the claims on Appeal and that the Examiner has stated that it would have been obvious to have selected the appropriate amounts of the two particles through the process of routine experimentation. Appellant argues that Examiner's obviousness position merely attempts to add to the reference what the Examiner has admitted is not taught by the reference.

However, the Chen EP '897 reference relates to a non-aesbestos, non-metallic fibrous base material comprising a first layer of fibrillated aramid fibers and optionally cotton fibers, carbon fibers, carbon particles and a filler material and a second layer of friction modifying particles [0001]. Chen EP '897 teaches that Chen EP '897 is an

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improvement to the prior art (US 5,958,507) wherein the secondary layer comprises carbon particles and a retention aid (wherein the retention aid can be a latex binder). Chen EP' 897 teaches the secondary layer or top layer of friction modifying particles is deposited on the primary layer to form the fibrous base material and teaches various friction modifying particles are useful as the secondary layer, in particular silica particles, such as diatomaceous earth, celite®, celatom® and/or silicon dioxide [0025]. Chen EP '897 teaches silica particles are particularly useful as they are inexpensive materials that strongly bond to fibrous materials and the silica particles provide high coefficients of friction and provide a smooth friction surface and provide a good "shift feel" and friction characteristics to the friction material such that "shudder" is minimized [0060]. Chen EP '897 teaches that the total amount of friction modifying particles in the secondary layer is 0.2 to 20% by weight of the fibrous base material. Chen EP '897 is teaching that friction modifying particles are useful in the secondary layer and is teaching a composition based on the weight of the fibrous base. Chen EP '897 is teaching that prior art employed carbon particles as friction modifying particles in the secondary layer. Chen EP '897 is teaching silica particles as friction modifying particles in secondary layer. As it was known in the art to employ carbon particles and Chen EP '897 presents the motivation to employ silica particles as they are less expensive and have good friction properties as noted above, it would have been obvious to one of ordinary skill in the art to combine the silica and carbon particles in the secondary layer and the results of the combination would have been predictable. It further would have

been obvious to have selected the appropriate amounts of the two particles through the process of routine experimentation to obtain optimum friction properties.

Appellant argues that considerable research was necessary to maximize the friction material to obtain the desired properties. However, Chen EP '897 presents further evidence to suggest a combination of friction modifying particles that combine carbon particles and silica particles and teach in claim 5 "The friction material of claim 4, wherein the friction modifying particles comprise silica particles, resin powders including phenolic resins, silicone resins, or epoxy resins and mixture thereof; fully carbonized carbon powder or particles or partially carbonized powder or particles and mixtures thereof." And Chen EP '897 teaches compositions of friction materials in the primary layer wherein the primary layer of a fibrous base materials comprises 38-40% by weight less fibrillated aramid fibers, 13-15% by weight carbon particles, about 10-12% by weight of cotton fibers about 4-6% of carbon fibers and about 28-30% by weight celite filler material. Celite filler material is equivalent to silica. As the reference teaches the weight percentages are based on the total weight of the fibrous base and Appellant is claiming a composition of silica and carbon particles as a percentage of the total weight of only the friction modifying particles, the compositions can not be equated. However, the compositions of the primary layer presented by Chen EP '897 would provide one of ordinary skill in the art the motivation to combine the silica and carbon particles and with a relative composition that one of ordinary skill in the art could have obtained the claimed composition through the process of routine experimentation and the results would have been predictable. As Appellant has not presented findings that this

composition would have presented an unexpected result or unexpected properties, it is reasonable to presume that the results would have been predictable.

I and II B. Appellant's arguments with respect to the 103(a) rejection over Lam 5,998,307 in view of Chen EP 1,203, 897.

Appellant argues that the Lam '307 patent does not disclose or suggest a secondary layer having a mixture of carbon and silica friction modifying particles or the specific ranges for these components set forth in the claims on Appeal. Appellant argues that the Lam '307 patent has the same deficiencies as the previously discussed Chen EP '897 patent and the fact that Lam '307 patent only recites carbon friction modifying particles clearly teaches away from placing other types of friction modifying particles in the secondary layer. Appellant states that "absent some suggestion in this reference (referring to Lam '307) to utilize different friction modifying particles and the specific ranges for such particles, this rejection does not satisfy the "common sense" test of the Teleflex decision or the Federal Circuit's "teaching, suggest, motivation" test".

However, the 35 USC 103(a) rejection is made over the reference of Lam '307 in view of Chen EP '897 and that it would have been obvious to combine the teachings of Lam '307 that teaches placing carbon particles in the secondary layer and Chen EP '897 that teaches silica particles can be substituted for carbon particles. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on

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combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Lam '307 clearly teaches using carbon particles as friction modifying particles in the secondary layer and teaches a range of compositions of carbon particles in the secondary layer as presented in Table 26 and examples S, T, U, V and W (col. 33, lines 1-17 of Lam '307). Table 26 presents data for 0% carbon particles which has surface carbon coverage of 2% of the primary layer and up to 20% carbon particles which results in surface carbon coverage of 90%. The primary layer of Lam '307 is comprised of 20% less fibrillated aramid fibers, 20% synthetic graphite, 20% diatomaceous earth (silica) and 35% cotton fibers. Chen EP '897 clearly discloses employing secondary layer of friction modifying particles and states useful friction modifying particles include carbon particles and silica particles. Chen EP '897 then provides motivation to employ or substitute silica particles for carbon particles as they are less expensive and have desirable friction properties such as high coefficient of friction, smooth friction surface and minimize shudder. Therefore one of ordinary skill in the art could have substituted all or a portion of the carbon particles with

silica particles and the results of the substitution would have been predictable in producing a friction material with the desired properties.

Appellants argue that the Lam '307 reference presents no suggestion for the ranges of carbon and silica modifying particles as set forth in the claims on Appeal and the Chen EP '897 patent does not supply the deficiencies of the Lam '307 patent. However, Chen EP '897 presents a motivation to combine the silica particles and the carbon particles on the secondary surface of the friction material and presents the rationale to optimize the composition of the friction modifying particles on the secondary layer. Further, the rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). As Chen EP '897 and Lam '307 both present findings in the art that one of ordinary skill could have employed silica particles in the secondary or carbon particles in the secondary layer, one of ordinary skill in the art could have optimized the combination of silica and carbon particles to obtain the desired properties with a reasonable expectation of success.

Appellants argue that Examiner can not use piecemeal reconstruction that ignores the limitations in the claims to arrive at the claimed invention. However, the Examiner is not relying on the references individually in this rejection, but is maintaining that Chen EP '897 teaches that it is known in the art to employ silica particles and

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carbon particles in the secondary layer and Chen EP '897 presents motivation to employ silica particles. Chen EP '897 also references prior art that utilized carbon particles in the secondary layer. Chen EP '897's disclosure and claims only encompass a composition of friction modifying particles that are silica particles employed at a percentage of 0.2-20% of the base material. Lam '307 disclosure presents data that is evidence of how the properties of the final friction material differ as the compositions of carbon particles changes in the secondary layer. As disclosed, one of ordinary skill in the art could have combined the teachings of the two references and optimized the composition of silica and carbon particles in the secondary layer and the results of the combination would have been predictable.

I and II C. Appellant's arguments with respect to the 103(a) rejection over Lam 6,630,416.

Appellants arguments are moot as the 35 USC 102(f) rejection has been withdrawn.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/J. S./

Examiner, Art Unit 1794

/Elizabeth M. Cole/

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